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32. Куда летит перчатка астронавта, или разгадка "Джемини-4". Часть 2.

12-14 minutes

Continuation of the article about how NASA in the pavilion filmed E. White's spacewalk.

Start here , part 1.

Before revealing in detail the technology, how the effect of weightlessness was created in the pavilion, let me tell you about four reasons that led us to the conclusion that White's spacewalk was a falsification. The first two reasons have been mentioned repeatedly before us, so we will limit ourselves to only a cursory description. But the third and fourth reasons relate directly to the field of cinema, and therefore will be considered in detail by us.

3 reason - the position of the astronaut in zero gravity.

The Gemini 4 flight was designed to be the first multi-day flight of a US manned spacecraft, and, according to NASA, lasted 4 days.
NASA, worried about the lag in the space race, made spacewalk one of the main tasks after the successful flight of the Soviet spacecraft Voskhod-2 and the spacewalk of cosmonaut Alexei Leonov. During the release of Alexei Leonov, the image from the TV camera outside the sealed body of the spacecraft was transmitted to European countries via the TV broadcasting systems "Intervision" and "Eurovision" (specify), and millions of viewers could watch live the first manned space walk ... But during the live broadcast of White's spacewalk, a hand-drawn cartoon was shown on TV - Fig. 17.

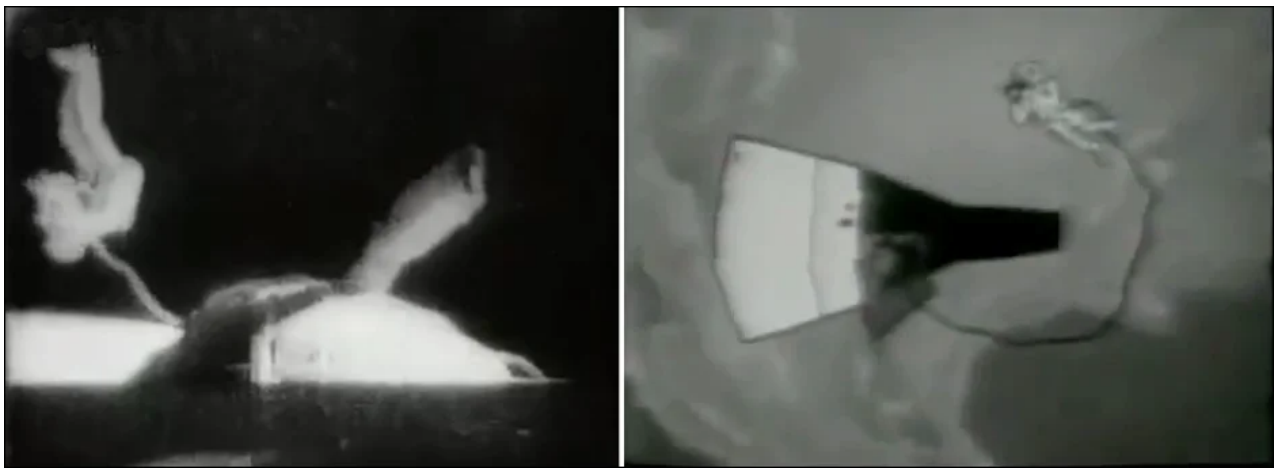

Fig. 17. TV frame from the live broadcast of A. Leonov's release (left) and the cartoon of the live broadcast of E. White's output (right).

When they talk about A. Leonov's spacewalk, they cite footage shot with a 16-mm movie camera, and we took fragments shot, albeit in the worst resolution, but with a TV camera.

VIDEO:

Fragment of a TV broadcast with the release of A. Leonov

During White's live broadcast, an ordinary cartoon was shown on TV. At the same time, the astronaut's voiceover was broadcasting allegedly from orbit.

VIDEO of the television broadcast of the live broadcast of White's exit (fragment for 1 minute)

On U-Tuba, you can find a television recording of a live broadcast of another spacewalk performed by the astronaut Gemini 9. The television coverage lasts 45 minutes, although, according to NASA legend, the astronaut spent 2 hours and 8 minutes in outer space. (Hollywood science fiction knows no limits!)

We cut out a few fragments from this 45-minute reportage for 1 minute so that you have an idea of what exactly the audience saw on TV during the live broadcast.

VIDEO:
Live broadcast of the spacewalk from Gemini 9 Video (1 minute)

In the wake of the first spacewalk of the US astronaut, the documentary film "4 days of Gemini 4" ("NASA Documentary 4 Days of Gemini 4", 1965) was released, in which the episode of White going into outer space lasts 9 minutes.
But here's what seemed strange to us in this film. Usually, in zero gravity, the human body is relaxed, and it is stretched along a line. This can be seen when astronauts leave the ISS for repair work - Fig. 18,19.

Fig. 18. Spacewalk from the ISS.

Fig. 19. Repair work on the ISS in open space.

But White hangs ALL THE TIME in the shape of the letter "P". One gets the feeling that he is simply suspended behind his back on a cable. And so throughout the video.
Exactly in the same position the actor hung in the simulator during the TV show of Gemini 9 - fig. 20.

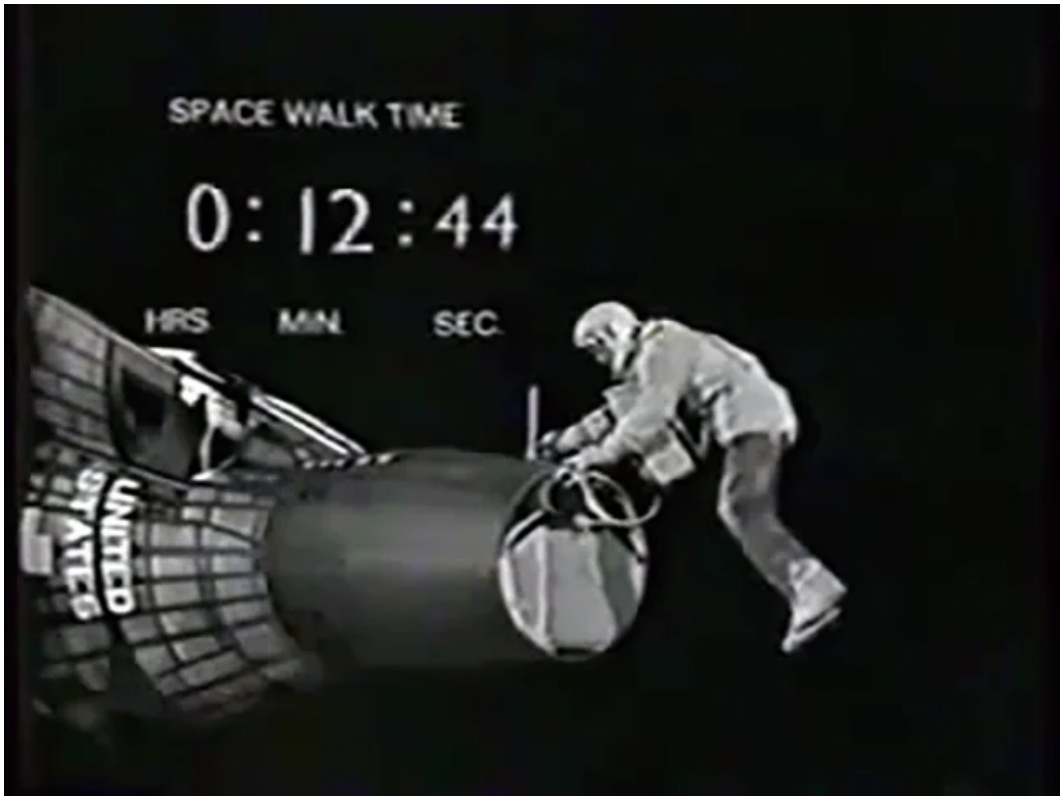

Fig. 20. A still from the televised spacewalk of an astronaut of the Gemini-9 project, filmed in a simulator.

White never straightened up. As he hung, bent in the shape of the letter "P" at the beginning, so in this position he "flew" to the end - Fig. 21,22.

Fig. 21. The position of White's piece at the beginning ...

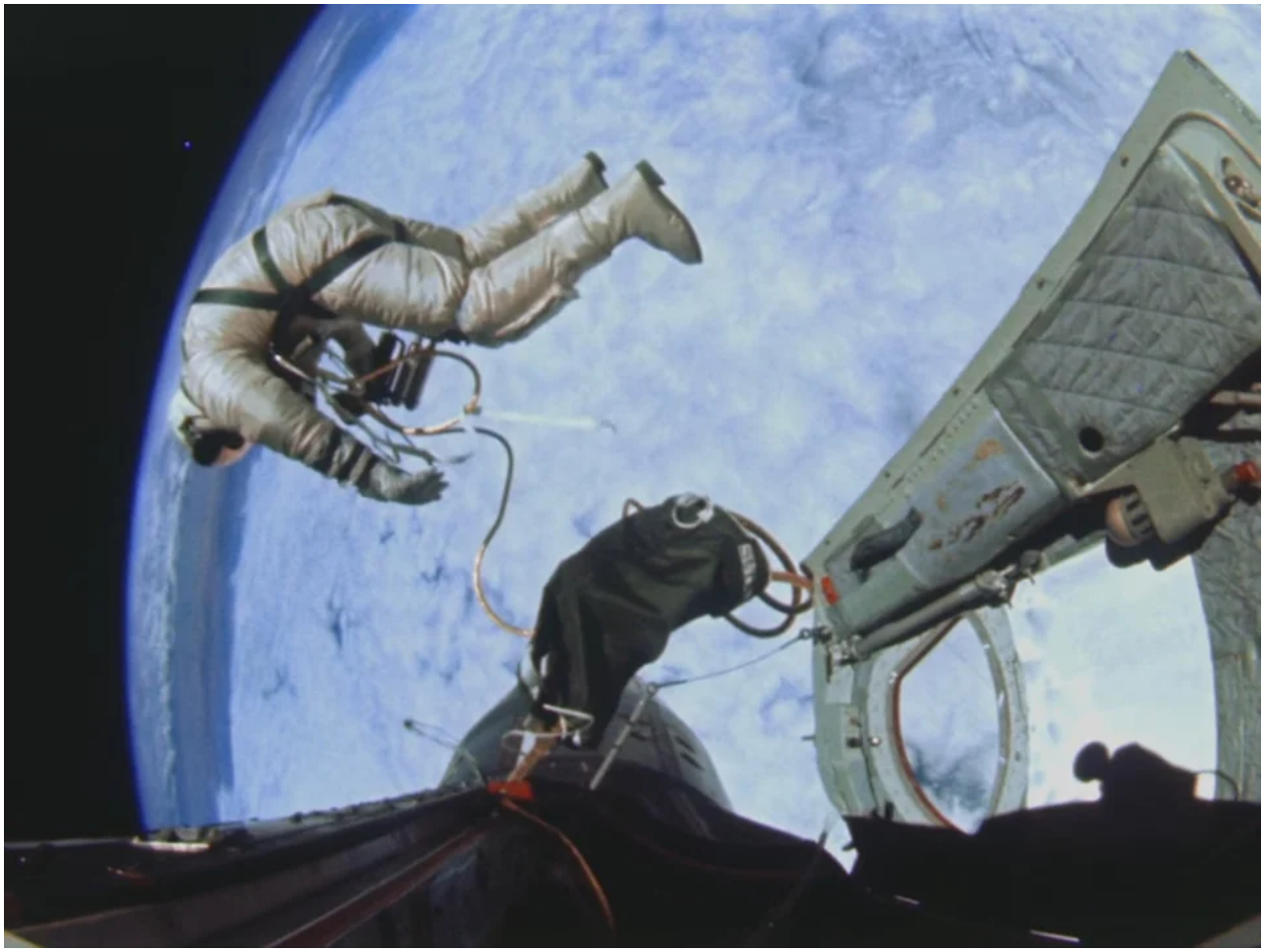

Fig. 22. The position of White's figure at the end ...

To make you understand that it is still hanging on the cable, we will rotate the image 90˚ - fig. 23.

Fig. 23. The astronaut, as in the beginning, is still hanging on the rope.

Now, I hope you understand that it was not the actor who was turning in the frame, he was hanging motionless, and a mock-up of a spaceship with an attached camera turned around him. Accordingly, the movie screen with the background, which was rigidly tied to the camera, was also rotated. And it seemed to you that it was an astronaut who was turning in zero gravity.

4th reason - deliberately demonstrative display of some elements.

At the very beginning of the episode, we see the shadow of a hand moving away from the camera lens. This should mean that White is kind of turning on the movie camera - fig. 24.

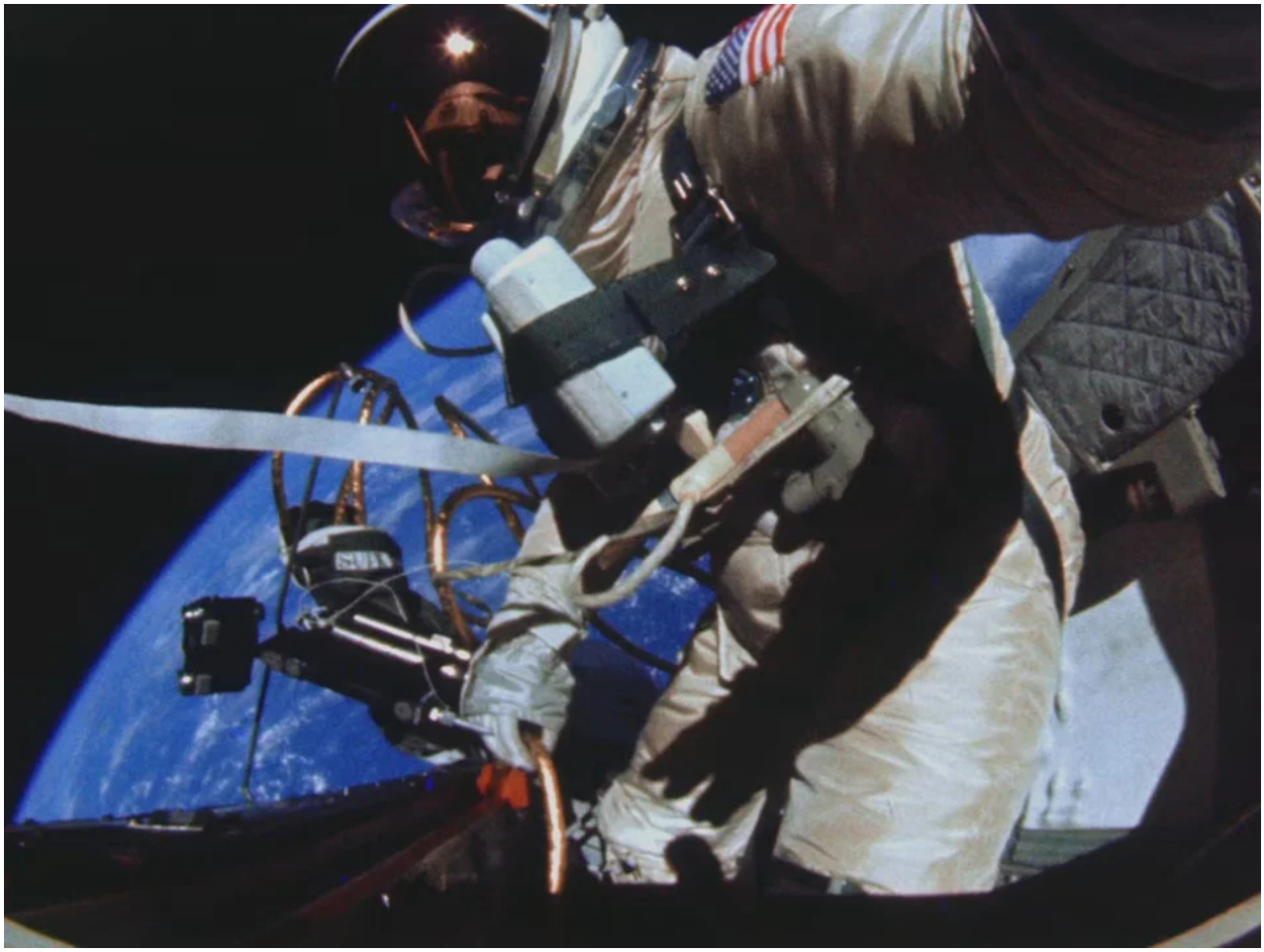

Fig. 24. The shadow of the hand shows that White seems to be turning on the camera.

And then this shadow deliberately remains for a long time in the lower right corner - Fig. 25.

Fig. 25. In the lower right corner is the shadow from a 16mm movie camera.

It can be noted that there is no protection whatsoever on the camera. When A. Leonov went into outer space, the filming 16-mm film camera, installed outside, was in a screen-vacuum envelope.

The next deliberately shown element is a glove. We are shown that it seems to soar in weightlessness and rises up the frame - Fig. 26. And all this takes place in the "rapid". Since most people don't know this film term, here's the American equivalent, slow motion. The flight of the glove is delayed action.

Fig. 26. So we were shown the departure of the gloves.

If you take the original video, which was released on DVDs and posted on U-Tube in 2009, you can see that there are a lot of "dead" frames in the video. Of the 24 frames that pass per second, there are only 6 original ones. Each frame is duplicated 4 times. NASA admits that each frame is actually repeated 4 times, but explains this as follows. Allegedly, the astronauts saved the film and filmed at a speed of 6 frames per second, and then in the laboratory these 6 frames were multiplied up to 24 frames per second.
In fact, this explanation was invented for the general audience. But cinema professionals see that the shooting was done at normal speed, 24 frames per second, and then the result was slowed 4 times by multiplying each frame in order to get deliberately slowed down action and smooth movements.

Thus, instead of 9 minutes of screen time, the process of the "space walk" itself lasted just over 2 minutes. Therefore, that smoothness of the astronaut's movement arises not due to the presence of weightlessness, but due to the deliberately slowed down display. You start watching the video and for almost two minutes out of nine after turning on the camera (more precisely, 1 min 50 sec), the astronaut still cannot start moving into “outer space”. The astronaut pulled both legs (1:50), but continues to hang motionless, pushes off with his left foot (1:55), but does not budge, pushes off with his right foot (1:59), but still does not budge, and then by itself, for no reason, begins to move away. In fact, he hesitated for 20-25 seconds (as if fiddling with a pneumatic gun and a camera), but when slowing down, this time interval turned into 2 minutes.
Another reason why the real speed of the "astronaut" was slowed down - the slowdown hides the sharp jolts and jerks of the astronaut on the cable - and there are those in the record, we noticed them in five places. After we show you the technique of hanging an actor, it will become clear to you what causes these tremors.

In 2020, the video was passed through special computer programs and removed the "dead" frames, replacing them with interpolation - a miscalculation of intermediate positions between the two phases.
The glove that slowly flew out of the hatch actually moved 4 times faster. But the most interesting thing is that it does not move evenly. First, it quickly flies out of the capsule and falls on the porthole of the door, and at the end its movement slows down, and it barely flies.
We were shown that it "flies" upward. But in fact, she just fell vertically down, picking up speed.
Here the masters of Hollywood used the "rewind" method. In other words, White's entire space walk was filmed backwards. First, the actor portraying astronaut White spun around the capsule, flew off into the distance, and then approached the capsule, lowered his feet into the open hatch and stretched out his hand to the movie camera, as if turning it on.

VIDEO:

We were shown the departure of the glove in this way (video 2009):

But in reality, everything happened differently. The glove was held at the very edge of the frame at the top, and then twisted and released. Therefore, it appears in the frame with a low speed of movement, and then, accelerating, falls down, sliding along the window of the door.

This is the first method used by the masters of Hollywood to create the effect of flying in zero gravity - the method of reverse shooting.

VIDEO:

Here's how the glove moved in reality.

In addition, to slow down the fall of the glove, a counterflow of air from the hatch was used. It was this stream of air (from the fan) that fluttered the ribbons away from the hatch. The belts do not move randomly. The direction of the flow is unambiguously guessed.
The reverse shooting method is used very widely in cinema. For example, some shots in scenes with car crashes due to safety precautions are filmed in reverse. Instead of filming, as it is written in the script, that a truck runs into a person, they shoot a frame of a truck pulling away from a person, picking up speed. And then they run the film in the opposite direction, and it turns out that the car at high speed, as it were, collides with a person.

Here are some examples of reverse filming from L. Gaidai's 1961 comedy “Dog watchdog and unusual cross ".

After the “reverse shot” technique, it is necessary to tell about the second technique, which was used in the scene with White. The technique is called "shooting with an unusual position of the shooting camera"

The moment the glove flies across the frame, the astronaut is in an unusual position. It seems to you that it hangs almost horizontally in zero gravity, but in fact it continues to hang on the cable in the same vertical position. It's just that the camera smoothly changed the shooting point. If at first the camera filmed the hanging astronaut from the side - Fig. 27,

Fig. 27. Shooting from the side

then the camera moved down (along with the capsule layout). The astronaut's heels were turned to the camera lens.

Fig. 28. The astronaut is now facing the lens with the soles of the lens.

Finally, the camera sees the astronaut from a low angle - Fig. 29.

Fig. 29. Shooting from a lower angle.

Here is the starting position of the astronaut in the NASA video. According to the 2020 video, it is 2min 06s. The timecode is indicated in the lower right corner - Fig. 30.

Fig. 30. The beginning of the movement of the astronaut, moving away from the capsule.

After 35 seconds, the astronaut moved away from the camera by about 3-4 meters. The answer to his "departure" is simple - the astronaut was simply moved with a crane boom. Let's illustrate the distance of the astronaut from the capsule using a mock-up. We did not have a figure of White, curled up in the shape of the letter "U", so we put another astronaut, with a knapsack on his back - Fig. 31.

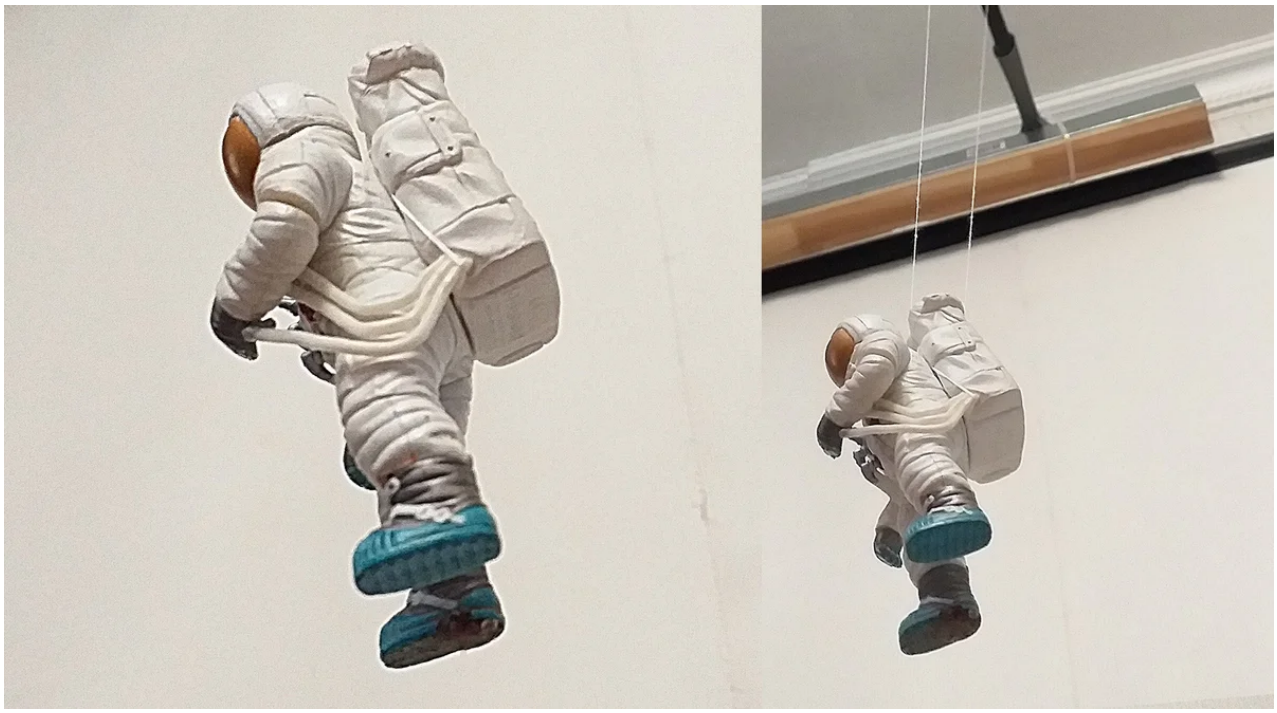

Fig. 31. Illustration of White's distance using a model.

We notice that, moving away, the astronaut turns slightly left and right around its axis (2min 11s - 2min 28s). Here is the turning phase for 2 minutes 19 seconds - fig. 32.

Fig. 32. The astronaut turned his booty towards us.

But he returned to its original position, to the "profile" - Fig. 33.

Fig. 33. The astronaut returned to the starting position, in the "profile".

At the end of the crane boom, a LIRA is attached, which can rotate around its axis by 360˚. Here is an example of a camera crane with a lyre - fig. 34.

Fig. 34. A crane with a lyre at the end of an arrow.

Only instead of a filming camera in a NASA movie clip, an astronaut was attached to the lyre. Two thin steel cables run from the left and right edges of the lyre. Here's a clue to how a perfectly stationary astronaut rotates 90˚ clockwise around the vertical axis and comes back.

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Continuation, PART 3.

Start here , part 1.

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Cameraman L. Konovalov was with you. Until next time!